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CS 865: Advanced Topics in Soft Computing

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CS 865 – ADVANCED TOPICS IN SOFT COMPUTING
SPRING, 2007

Instructor: Dr. Michael Raymer
391 Joshi Research Center
775-5110
michael.raymer@wright.edu

Room & Time: Tue & Thur, 12:20 – 1:35 pm, 302 Russ Center

Office Hours: Wed 3:30 – 5:00 pm;
Or by appointment.

Overview: We will be investigating the state of the art in several areas of soft computing, including:

- Evolutionary computing
- Neural Networks
- Statistical and semantic pattern recognition
- Fuzzy logic and fuzzy sets

Students will present topic tutorials and literature surveys, and lead discussions of current journal articles in these fields.

Lecture Schedule:

Week	Topics
1	Guided discussions: Pattern recognition, Evolutionary computation
2	Lectures: Fuzzy logic & fuzzy sets, control theory
3	Student Tutorials: Fuzzy reasoning
4	Tutorials: Fuzzy control
5	Tutorials: Other topics
6	Paper discussions
7	Paper discussions
8	Paper discussions
9	Term project presentations
10	Guest lectures and special topics

Grading: Tutorial presentations: 30%
Literature presentations: 30%
Term project: 30%
Contributions to in-class discussions: 10%

Tutorials: Students will select an algorithm in an area related to the course, and present an in-depth tutorial on how to implement and/or utilize the method. The student will provide a short take-home exercise for the

rest of the class to test class comprehension of the topic area.

Appropriate topic areas for tutorial presentations will be presented in class.

Paper discussions: Students will select a recent journal article presenting a new algorithm or application of a technique relevant to the course. The student will provide the paper to the rest of the class one week before the discussion. The class will be expected to read the paper in advance. The student will present a synopsis of the paper, and then lead a discussion of the paper's technical quality, soundness, and contribution to the field.

Term project: Students will implement a computational technique relevant to the course, or apply a salient method to a data set of their choosing. The results of their investigations will be presented to the class. Further term project details will be discussed in the second week of the quarter.